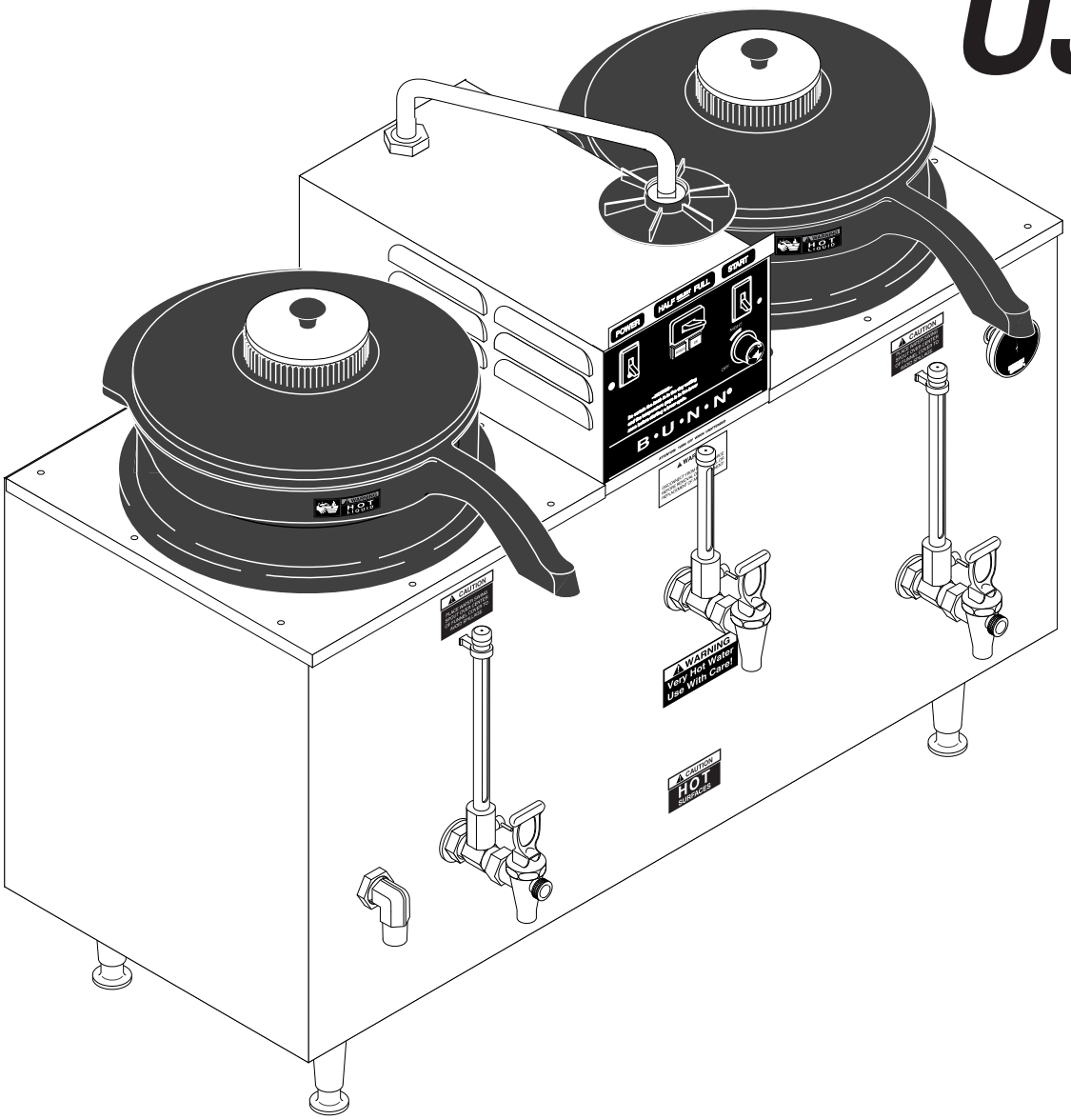
BUNN®

U3
U3A



OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

POST OFFICE BOX 3227
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INTRODUCTION

This brewer will brew a three gallon batch of coffee into each reservoir (one at a time). Each reservoir has its own dispensing faucet(s).The brewer also has a hot water faucet(s) for allied beverage use. It is only for indoor use on a sturdy counter.

WARRANTY

Bunn-O-Matic Corp. ("Bunn") warrants the equipment manufactured by it to be commercially free from defects in material and workmanship existing at the time of manufacture and appearing within one year from the date of installation. In addition:

1.) Bunn warrants electronic circuit and/or control boards to be commercially free from defects in material and workmanship for two years from the date of installation.

2.) Bunn warrants the compressor on refrigeration equipment to be commercially free from defects in material and workmanship for two years from the date of installation.

3.) Bunn warrants that the grinding burrs on coffee grinding equipment will grind coffee to meet original factory screen sieve analysis for three years from date of installation or for 30,000 pounds of coffee, whichever comes first.

This warranty does not apply to any equipment, component or part that was not manufactured by Bunn or that, in Bunn's judgement, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The agents, dealers or employees of Bunn are not authorized to make modifications to this warranty or to make additional warranties that are binding on Bunn. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

The Buyer shall give Bunn prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois, 62708-3227. If requested by Bunn, the Buyer shall ship the defective equipment prepaid to an authorized Bunn service location. If Bunn determines, in its sole discretion, that the equipment does not conform to the warranty, Bunn shall repair the equipment with no charge for parts during the warranty period and no charge for labor by a Bunn Authorized Service Representative during the warranty period. If Bunn determines that repair is not feasible, Bunn shall, at its sole option, replace the equipment or refund the purchase price for the equipment.

THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AS SPECIFIED HEREIN, TO REPAIR OR, AT BUNN'S SOLE OPTION, REPLACEMENT OR REFUND.

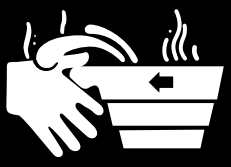
In no event shall Bunn be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

USER NOTICES

Carefully read and follow all notices on the brewer and in this manual. They were written for your protection. All notices on the brewer are to be kept in good condition. Replace any unreadable or damaged labels.

#00656.0000

⚠ WARNING



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REMOVE FUNNEL SLOWLY

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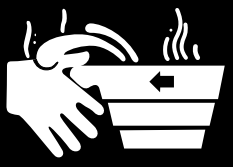


⚠ WARNING

HOT LIQUID

#03409.0000

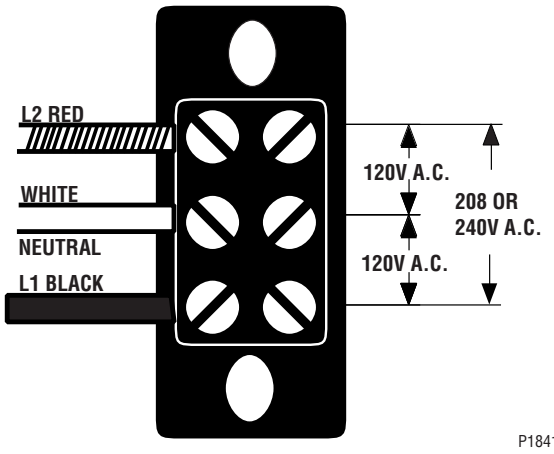
⚠ CAUTION

HOT SURFACES

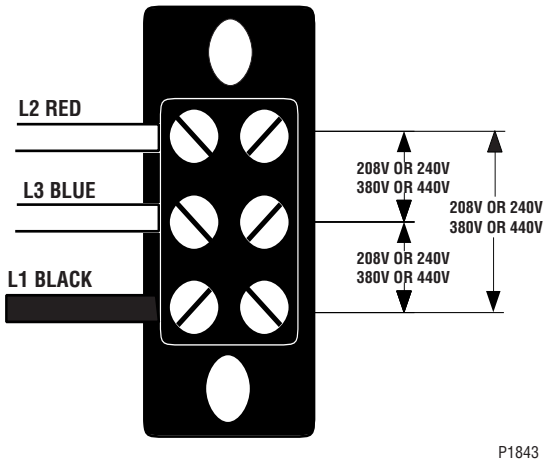
#12555.0000

ELECTRICAL REQUIREMENTS

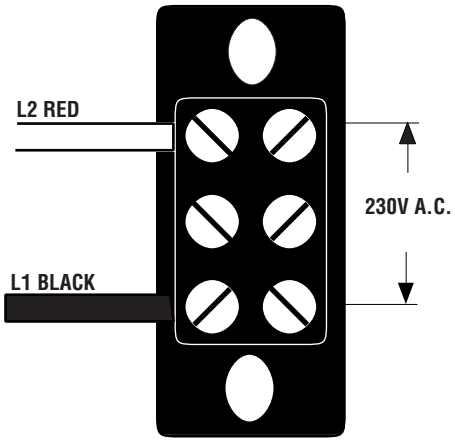
CAUTION - The brewer must be disconnected from the power source until specified in *Initial Set-Up.*



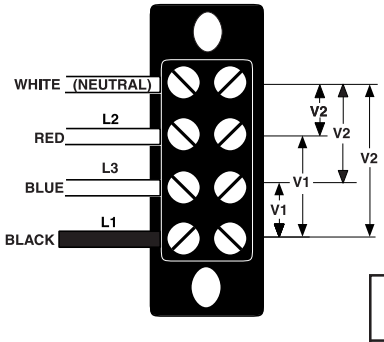
U3 & U38 requires 3-wire, grounded service rated 120/208 or 120/240 volts ac, U3-30 amp,U38-40 amp, single phase, 60 Hz. Proceed as follows:



U333 & U3833 requires 3-wire, grounded service rated 240 volt ac, 35 amp or 440 volts ac, 30 amp for U333,three phase, 60 Hz or 380 volts ac, 30 amp for U3833, three phase, 50 Hz. Proceed as follows:



U3A models require 2-wire, grounded service rated 230 volts ac, 30 amp, single phase, 50 Hz. Proceed as follows:



L1, L2, L3, are the 3 phases

V1 = Phase to phase voltage, between any 2 phases.

V2 = Phase to neutral voltage, any phase to neutral.

SYSTEM VOLTAGE	V1	V2
208	208	120
240	240	139
380	380	220
440	440	254

U3833 requires 4-wire, grounded service rated 380 volts ac or 440 volts ac, 30 amp, three phase, 50 Hz. Proceed as follows:

ELECTRICAL INSTALLATION INSTRUCTIONS

CAUTION – Improper electrical installation will damage electronic components.

1. An electrician must provide electrical service as specified.
2. Using a voltmeter, check the voltage and color coding of each conductor at the electrical source.
3. Before electrically connecting the brewer, remove the front cupola cover (some models have the thermostat knob on the outside of the cover) and rotate the thermostat knob fully counterclockwise to the "OFF" position. Keep this knob in the "OFF" position until performing the *Initial Setup*.
4. Electrical service is connected at the upper rear of the single service and scrambler brewers using a junction box. On double service brewers the rear decorative channel must be removed for access to the terminal block.
5. Connect the brewer to the power source and verify the voltage at the terminal block before proceeding. Replace all panels.

6. If plumbing is to be hooked up later be sure the brewer is disconnected from the power source. If plumbing has been hooked up, the brewer is ready for *Initial Setup*.

NOTE: Schematic wiring diagrams are included in this manual.

PLUMBING REQUIREMENTS

These brewers must be connected to a cold water system with operating pressure between 20 (138) and 90 psi (620 kPa) from a 1/2" or larger supply line. A shut-off valve should be installed in the line before the brewer. Install a regulator in the line when pressure is greater than 90 psi (620 kPa) to reduce it to 50 psi (345 kPa). The water inlet fitting is 3/8" flare.

NOTE - Bunn-O-Matic recommends 3/8" copper tubing for installations from the 1/2" water supply line. A tight coil of copper tubing in the water line will facilitate moving the brewer to clean the countertop. Bunn-O-Matic does not recommend the use of a saddle valve to install the brewer. The size and shape of the hole made in the supply line by this type of device may restrict water flow.

This equipment must be installed to comply with the Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

INITIAL SETUP

CAUTION - The brewer must be disconnected from the power source throughout the initial setup, except when specified in the instructions.

IMPORTANT: Brewer must be level and installed on a sturdy structure.

Electrician's and Plumber's Instructions are provided. These instructions should be carefully followed before proceeding with initial setup.

Be sure all electrical and plumbing connections are tight.

1. Open manual fill valve located on the bottom of the brewer. Water should start filling the tank. When water is visible in the hot water gauge glass (center spigot), close valve. Approximate time for filling manually is 3 minutes.

CAUTION: Never leave brewer unattended while manually filling tank.

2. Connect the brewer to the power source. Turn "ON/OFF" switch to the "ON" position. Water should finish filling tank automatically.

NOTE: It is recommended that the "ON/OFF" switch be left in the "OFF" position at the end of the operating day or when unattended for a long period of time.

3. Disconnect the brewer from the power source. Remove front cupola cover for access to thermostat knob and timer. On some brewers the thermostat knob is located on the front of the cupola cover.
4. Turn the thermostat knob clockwise to an approximate 5 o'clock position. Allow 1-1/2 hours for water to heat. Time will vary with incoming water temperature.
5. On initial warm-up, some water may flow thru the overflow spigot due to expansion of the cold water in the tank. This will not recur during the use of the brewer and may be avoided on the initial warm-up by drawing off 1/2 gallon decanters of water each 15 minutes till brewing temperature is reached.

INITIAL SETUP (cont.)

6. Brewing cycles may be started whenever water temperature is correct. This condition is indicated by the dial thermometer on front of the brewer. Whenever the pointer is in the green, brewer is ready for brewing. The recommended brewing temperature is approximately 200° F (93°C). Water temperature may be increased by turning thermostat knob clockwise, decreased by turning knob counterclockwise.
7. When desired temperature is reached, insert funnel support, funnel and funnel cover in position. Be sure the water swing spout is over the center of the funnel cover, turn "ON/OFF" switch to the "ON" position, push and release "START" and run a brew cycle of hot water only. At the end of this cycle, brewer will be ready for checking timer adjustment.
8. The timer has been preset for a 4 minute cycle. This setting will deliver approximately 3 gallons of water per brewing cycle. To increase or decrease amount of water, adjust the timer as required. See *Adjusting Brew Volumes.*
9. Having determined final settings of the thermostat and the timer, replace front cupola cover. Brewer is now ready for brewing coffee.

ADJUSTING BREW VOLUMES

CAUTION - Disconnect the power source from the brewer prior to the removal of any panel for the replacement or adjustment of any component.

NOTE: Prior to setting or modifying batch sizes, check that the brewer is connected to water supply, the tank is properly filled, and a funnel support, funnel and funnel cover are in place.

1. **Modifying batch sizes.** To modify a batch volume, first check that the SET/LOCK switch is in the “SET” position on the circuit board.

   To increase a batch size. Press and hold the START or BREW switch until you see three breaks in the water stream from the swing arm. Release the switch (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory) and press it again one or more times. Each time the switch is pressed, two seconds are added to the brew time period. Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

   To decrease a batch size. Press and release the START or BREW switch once for every two-second interval to be removed from the total brew time period; then immediately press and hold down the START or BREW switch until you see three breaks in the water stream from the swing arm. Release the switch. (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory). Allow the brew cycle to finish in order to verify that the desired volume has been achieved.
2. **Setting batch sizes.** To set a batch volume, first check that the SET/LOCK switch is in the “SET” position on the circuit board. Press and hold the START or BREW switch until you see three breaks in the water stream from the swing arm, and then release the switch. (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory). View the level of the liquid being dispensed. When the desired level is reached, turn the ON/OFF switch to “OFF” (lower). The brewer remembers this volume and will continue to brew batches of this size until the volume setting procedure is repeated.

NOTE: When brewing coffee, batch volumes will decrease due to absorption by the coffee grounds.

NOTE: HALF-BATCH AND FULL BATCH SETTINGS MUST EACH BE SET SEPARATELY.

3. **Setting programming disable feature.** If it becomes necessary to prevent anyone from changing brew times once programmed, you can set the SET/LOCK switch to the “LOCK” position. This will prevent any programming to be done until switch is once again placed in the “SET” position.

COFFEE BREWING

1. Brewing cycles may be started whenever water temperature is correct. This condition is indicated by the dial thermometer on front of the brewer. Whenever the pointer is in the green, brewer is ready for brewing.
2. Insert Bunn® filter in funnel and add desired amount of coffee.
3. Level the bed of coffee and place funnel into the funnel support. Place funnel cover over the funnel and be sure the water swing spout is over the center of the funnel cover.
4. Turn "ON/OFF" switch to the "ON" position.
5. Push and release "START" switch to start the brew cycle.
6. Water swing spout should not be moved as long as water is flowing into the funnel cover. When water stops flowing, it may then be moved for access to brewing funnel.
7. Remove funnel cover. Funnel should not be removed from brewer until drip out of coffee has been completed.
8. To empty funnel, invert it over a waste container to dispose of filter and grounds. An additional flange is provided on the funnel to help make this step easier.

NOTE: Hot water may be drawn from the hot water faucet during a brew cycle. However, if a large amount of hot water is drawn off (over 1 gallon) operator should wait to do so between brewing cycles.

CLEANING

NOTE: Tanks and tank components should be delimed regularly based on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosion reactions resulting in serious leaks.

1. Remove both funnels, funnel lids and supports, under hot water, rinse away all coffee oils. Wipe with a clean damp cloth.
2. Drain both coffee reservoirs by opening coffee faucets. When empty, close faucets.
3. Cycle two or three inches of water into each coffee reservoir and scrub entire reservoir area.
4. Drain both coffee reservoirs and rinse. Use clean damp cloth to wipe both reservoirs.
5. Install both coffee funnel supports, funnels and funnel lids.
6. Remove the sight gauge cap, insert sight gauge cleaning brush into the sight gauge glass tube and clean.
7. To clean coffee faucets, remove the faucet handle from the faucet and faucet clean out cap. Clean faucet with a faucet cleaning brush and wipe all parts with a damp cloth. Replace faucet seat cups periodically if badly stained or to stop faucet dripping. DO NOT CLEAN THE HOT WATER FAUCET.
8 Reassemble the coffee faucets.
9. Wipe the entire outside surface of the machine with a clean damp cloth. Wipe dry.

FILTER HOLDER

1. A filter holder is supplied with each U3 coffee brewer. Its purpose is to keep the filters in their originally formed shape to properly fit the brewer funnel.
2. It is suggested that only one cluster of filters be placed in the holder at one time for best results.
3. Not using the filter holder may permit the filters to gradually widen out towards a flat shape, especially so if humidity is present. Once a filter has lost its upright side walls, it may tend to collapse inward when placed in the brewing funnel. If this happens the hot water spray may cause one side to fall inwards, letting coffee grounds flow over the edge of filter and into the brewed coffee. Proper use of the holder should prevent this problem.

TROUBLESHOOTING

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department.

- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- All electronic components have 120 volt ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a switch contact or a loose connection at a terminal or crimp.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This brewer is heated at all times. Keep away from combustibles.

WARNING –
- Exercise extreme caution when servicing electrical equipment.
- Unplug the brewer when servicing, except when electrical tests are specified.
- Follow recommended service procedures
- Replace all protective shields or safety notices

PROBLEM	PROBABLE CAUSE	REMEDY
Brew cycle will not start	1. No water	Water lines and valves to the brewer must be open.
	2. No power or incorrect voltage to the brewer	(A1) Check the terminal block for 120 volts ac across the red and white terminals and the black and white terminal on three wire 102/208 volt or 120/240 volt models. (A2) Check the terminal block for 208 volts ac, 230 volts ac or 240 volts ac on "A Series" brewers across the red and black terminals on two wire single phase 208 volt, 230 volt and 240 volt models. (A3) Check the terminal block for 208 volts ac, 240 volts ac, 380 volts ac across the black and blue terminals, the blue and red and the black and red terminals on three wire three phase 208 volt, 240 volt and 380 volt models.

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Brew cycle will not start (cont)	2. No power or incorrect voltage to the brewer (cont)	(A4) Check the terminal block for 440 volts ac across the black and blue terminals, black and red terminals and the red and blue terminals on four wire three phase 440 volt models. (B) Check circuit breakers or fuses.
	3. Water level below pump housing. (Water level in the hot water gauge glass should be approximately half full).	Be sure water shut-off valve is open and that the in-line filters or strainers are not blocking water flow. (Do not confuse water shut-off valve with the manual fill and drain valve underneath the brewer).
	4. ON/OFF Switch	Refer to *Service* - ON/OFF Switch for testing. See page 22
	5. Start Switch	Refer to *Service* - Start Switches for testing procedures. See page 29
	6. Relay	Refer to *Service* - Relay for testing procedures. See page 24
	7. Timer	Refer to *Service* - Timer for testing procedures. See page 31 or 33
	8. Pump	Refer to *Service* - Pump for testing procedures. See page 23
	9. Solenoid Valve	Refer to *Service* - Solenoid Valve for testing procedures. See page 27
	10. Strainer	(A) Direction of flow arrow must be pointing towards brewer. (B) Remove the strainer and check for obstructions. Clear or replace.
Brew cycle starts with brew lockout relay engaged.	1. Relay	Refer to *Service* - Relay for testing procedures. See page 24

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Tank not filling	1.ON/OFF Switch (This switch must be in the "ON" position for the refill circuit to operate.	Refer to *Service* - ON/OFF Switch for testing procedures. See page 22
	2. No water	Be sure water shut-off is open and that in-line filters or strainers are not blocking water flow. (Do not confuse water shut-off valve with the manual fill and drain valve underneath brewer).
	3. Solenoid Valve	Refer to *Service* - Solenoid Valve for testing procedures. See page 27
	4. Probe	Refer to *Service* - Probe for testing procedures. See page 20
	5. Liquid Level Board	Refer to *Service* - Liquid Level Board for testing procedures. See page 20
Water running out of the overflow	1.Brewer not level	Brewer must be level and installed on a sturdy structure.
	2. Solenoid Valve	Refer to *Service* - Solenoid Valve for testing procedures. See page 27
	3. Liquid Level Board	Refer to *Service* -Liquid Level Board for testing procedures. See page 20
	4. Probe	Refer to *Service* - Probe for testing procedures. See page 20
	5. Manual fill and drain valve underneath brewer open.	Be sure valve is closed.

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Water not hot	1. Limit Thermostat **CAUTION -** Do not eliminate or bypass limit thermostat. Use only Bunn-O-Matic replacement part #29329.1000	Refer to *Service* - Limit Thermostat for testing procedures. See page19
	2. Control Thermostat	Refer to *Service* - Control Thermostat for testing procedures. See page 17
	3. Tank Heater(s)	Refer to *Service* - Tank Heater for testing procedures. See page 30
	4. Contactor	Refer to *Service* - Contactor for testing procedures. See page 15
Circuit breaker keeps tripping	1. Circuit Breaker	Refer to *Service* - Circuit Breaker for testing procedures. See page 14
	2. Tank Heater(s)	Refer to *Service* - Tank Heater for testing procedures. See page 30
Water keeps running from swing spout	1. Timer	Refer to *Service* - Timer for testing procedures. See page 31 or 33
	2. Start Switch	Refer to *Service* - Start Switch for testing procedures. See page 29
Inconsistent coffee yield	1. Timer	Refer to *Service* - Timer for testing procedures. See page 31 or 33
	2. Solenoid Valve	Refer to *Service* - Solenoid Valve for testing procedures. See page 27
	3. Lime build-up in swing spout and pump tubing.	Remove swing spout and insert deliming rod down into pump tubing as far as possible.
Funnels overflow	1. Filters	Use Bunn® filters made for the U3 brewer.
	2. Hole in bottom of funnel obstructed.	Remove obstruction.

TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Funnels overflow (cont.)	3. Pump - Flow Rate	Check pump flow rate with a watch. Pump flow rate should be approximately 24 ounces in 15 seconds. Be sure pump assembly is free of any obstructions.
	4. Soft Water	When using a water softener, a coarse grind of coffee may be preferred. If required, a bypass system is available as an optional feature.
Coffee reservoir overflows	1. Coffee reservoir not completely empty befor a brew cycle was started.	Be sure coffee reservoir is empty before brew cycle is started.
	2. Timer	Refer to *Service* -Timer for testing procedures. See page 31 or 33
	3. Pump - Flow Rate	Check pump flow rate with a watch. Pump flow rate should be approximately 24 ounces in 15 seconds. Be sure pump assembly is free of any obstructions.
Brewer is making unusal noises	1. Solenoid Valve	The nut on the solenoid must be tight or it will vibrate during operation.
	2. Plumbing lines	Plumbing lines should not be resting on the counter top.
	3. Water supply	(A) The brewer must be connected to a cold water line.
		(B) Water pressure to the brewer must not exceed 90 psi (620 kPa). Install a regulator if necessary to lower the pressure to approximately 50 psi (345 kPa).
	4. Tank Heater(s)	Remove and clean lime off the tank heater. See page 30

SERVICE

This section provides procedures for testing and replacing various major components used in this brewer should service become necessary. Refer to *Troubleshooting* for assistance in determining the cause of any problem.

WARNING - Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel. The brewer should be unplugged when servicing, except when electrical tests are required and the test procedure specifically states to plug in the brewer.

COMPONENT ACCESS

WARNING - Disconnect the brewer from the power source before the removal of any panel or the replacement of any component.

All components are accessible by the removal of the swing spout, front cupola cover, rear cupola cover and the cupola.

Disconnect the swing spout nut from the swing spout base fitting. Remove swing spout.

Remove the four #8-32 screws, two on the front and rear, securing front and rear cupola covers to the cupola.

Slip cupola off of the component bracket.

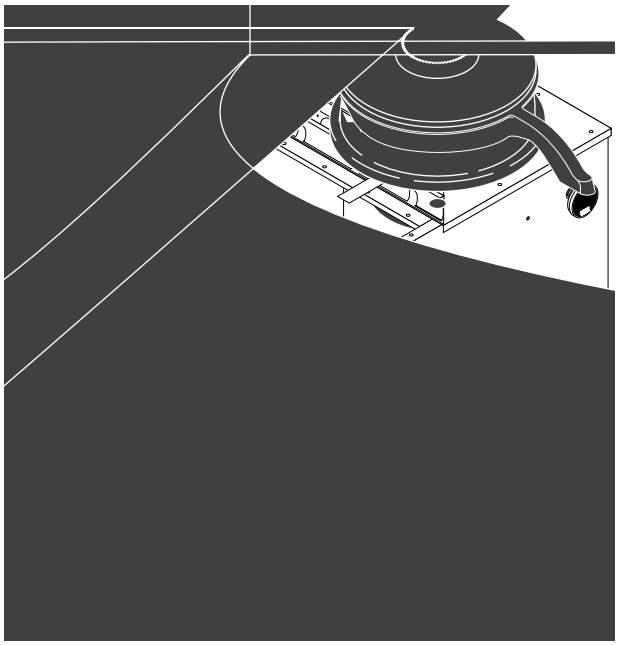


FIG. 1 COMPONENT ACCESS

CIRCUIT BREAKER (120/208V and 120/240V Three Wire Models and 440V Four Wire Models)

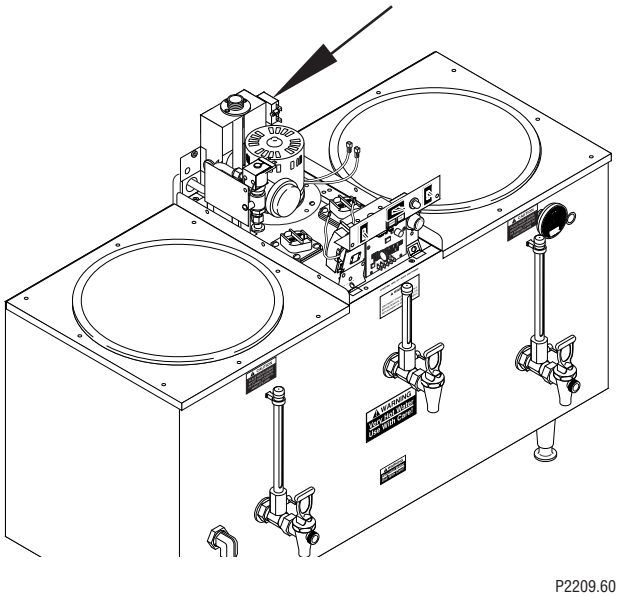


FIG. 2 CIRCUIT BREAKER

Location:

The circuit breaker is located on the right rear of the component bracket.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Disconnect the black wire from the main harness from the circuit breaker and the white wire on the pump assembly. With a voltmeter, check the voltage across the black wire and the white wire. Connect the brewer to the power source. The indication must be:
   a) 120 volts ac for three wire 120/208 volt and 120/240 volt models.
   b) 208 or 240 volts ac for four wire 440 volt models.
3. Disconnect the brewer from the power source.

If voltage is present as described, reconnect the white wire to the pump assembly and proceed to #4. If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

4. With the black wire removed, remove the other black wire from the circuit breaker.
5. Check for continuity across the terminals on the circuit breaker.

If continuity is present as described the circuit breaker is operating properly.
If continuity is not present as described, press the reset button and repeat step 5, if continuity is not present as described, replace the circuit breaker.

Removal and Replacement:

1. Remove wires from the circuit breaker.
2. Remove the nut securing the circuit breaker to the component bracket.
3. Remove circuit breaker and discard.
4. Install new circuit breaker on component bracket and secure with nut.
5. Refer to Fig. 3 and reconnect the wires.

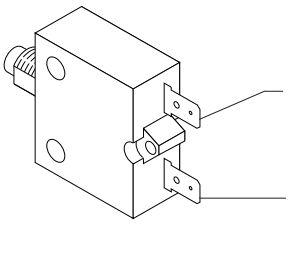


FIG. 3 CIRCUIT BREAKER TERMINALS P1723

SERVICE (cont.)
CONTACTOR (cont.)

9. Check for continuity across the terminals on the left side of the contactor by manually closing the contacts. Continuity must not present when the contact is released.
10. Check for continuity across the terminals on the right side of the contactor by manually closing the contacts.Continuity must not be present when the contact is released.

If continuity is present as described, the contactor is operating properly.
If continuity is not present as described, replace the contactor.

Removal and Replacement:

1. Disconnect all the wires from the contactor.
2. Remove the two #8-32 screws securing the contactor to the contactor mounting bracket, remove contactor and protective shield. Discard contactor.
3. Install new contactor with shield between mounting bracket and contactor and secure with two #8-32 screws
4. Refer to Fig. 5 and reconnect the wires.

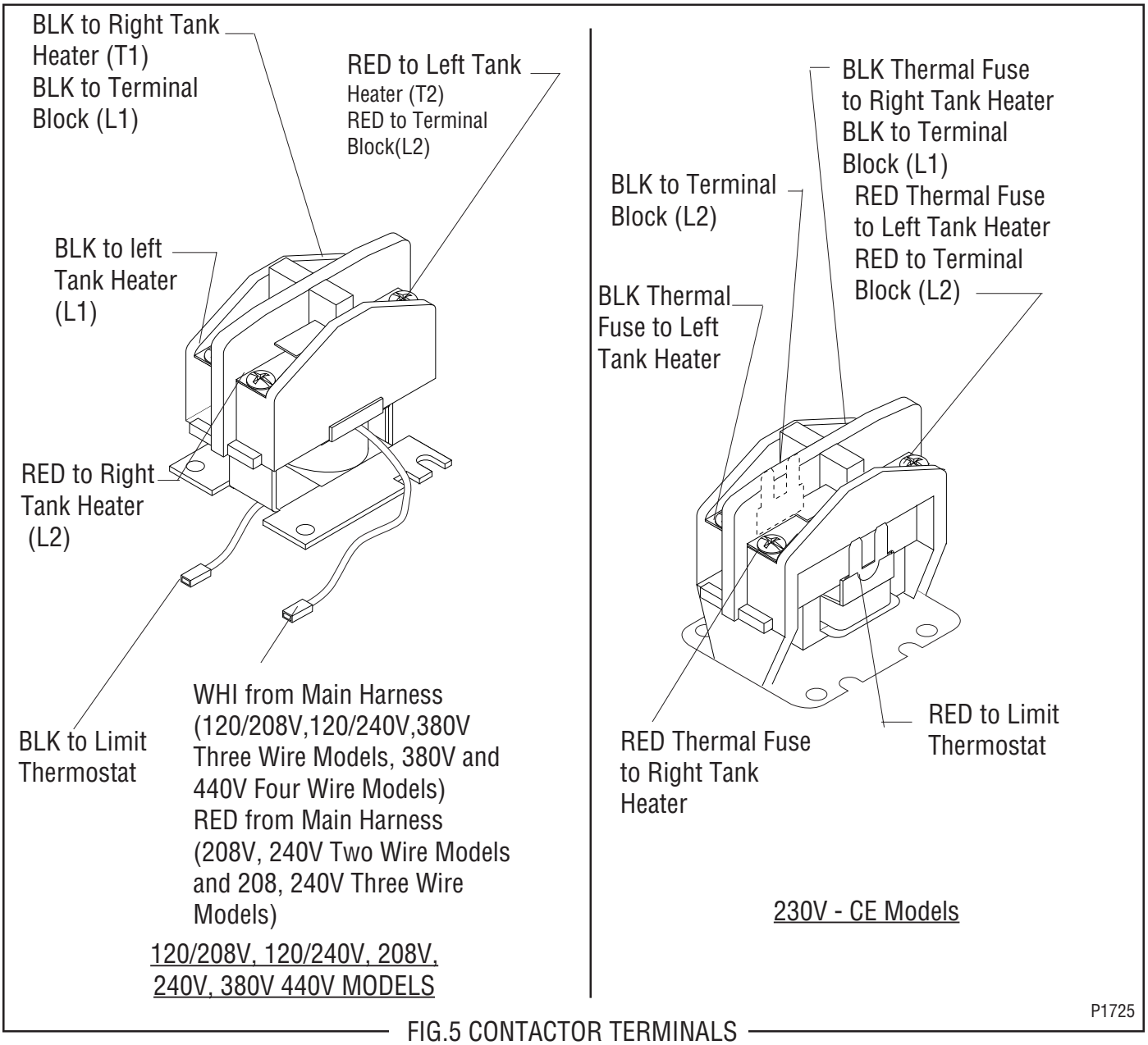
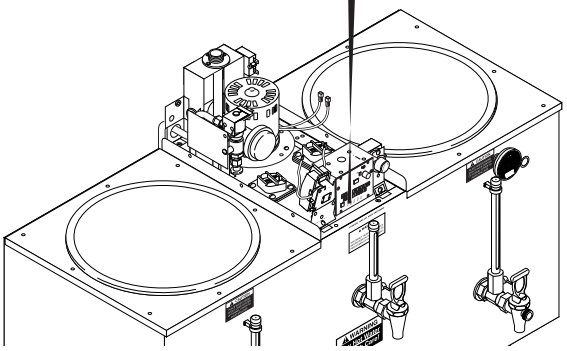
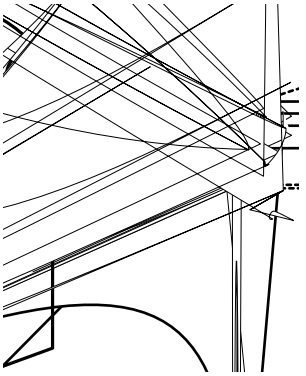

BLK to Right Tank Heater (T1) BLK to Terminal Block (L1)
RED to Left Tank Heater (T2) RED to Terminal Block(L2)
BLK to left Tank Heater (L1)
RED to Right Tank Heater (L2)
BLK to Limit Thermostat
WHI from Main Harness (120/208V,120/240V,380V Three Wire Models, 380V and 440V Four Wire Models)
RED from Main Harness (208V, 240V Two Wire Models and 208, 240V Three Wire Models)
120/208V, 120/240V, 208V, 240V, 380V 440V MODELS
BLK Thermal Fuse to Right Tank Heater BLK to Terminal Block (L1)
BLK to Terminal Block (L2)
RED Thermal Fuse to Left Tank Heater RED to Terminal Block (L2)
BLK Thermal Fuse to Left Tank Heater
RED Thermal Fuse to Right Tank Heater
RED to Limit Thermostat
230V - CE Models
P1725

FIG.5 CONTACTOR TERMINALS

SERVICE (cont.)
CONTROL THERMOSTAT





SERVICE (cont.)

FUSE AND FUSE HOLDER (208V, 240V, 230V Two Wire Models and 380V Three Wire Models)

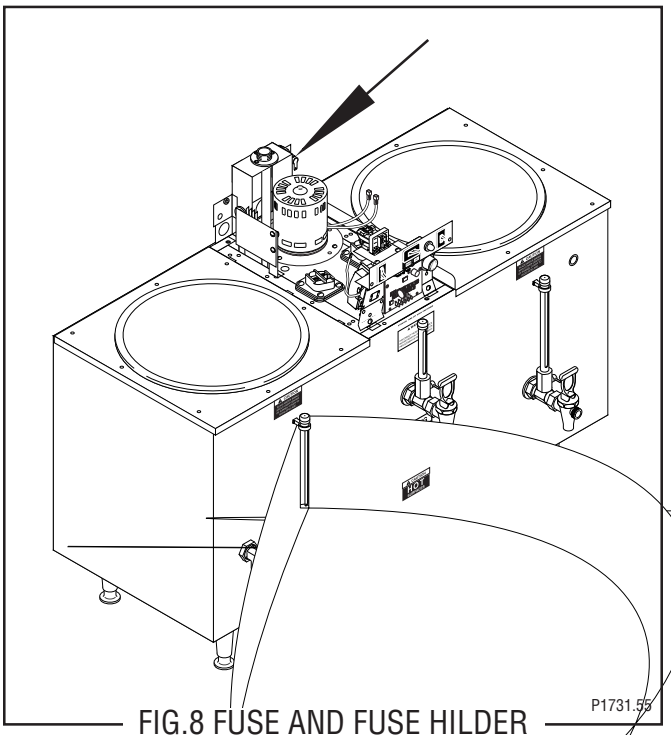


FIG.8 FUSE AND FUSE HILDER

Location:

The fuse and fuse holder are located on the right rear of the component bracket.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Remove the cap and fuse from the fuse holder.
3. Remove fuse from the cap.
4. Check for continuity through the fuse.

If continuity is present as described, reinstall the fuse, the fuse is operating properly.
If continuity is not present as described replace the fuse.

Removal and Replacement:

Fuse:

1. Remove the cap from the fuse holder.
2. Remove fuse from the fuse holder, inspect, if blown discard.
3. Install new 5 amp fuse in the fuse holder.
4. Reinstall fuse holder cap.

Fuse Holder:

1. Disconnect the wires from the rear of the fuse holder.
2. Remove the nut securing the fuse holder to the component bracket.
3. Push fuse holder through the hole in the component bracket.
4. Install new fuse holder and fuse through the hole in the component bracket and secure with nut.
5. Refer to Fig. 9 and reconnect the wires.

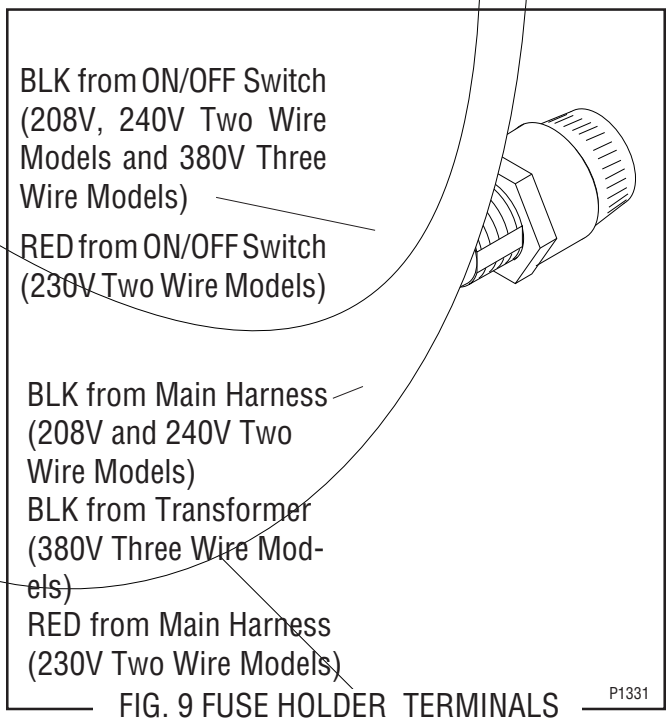
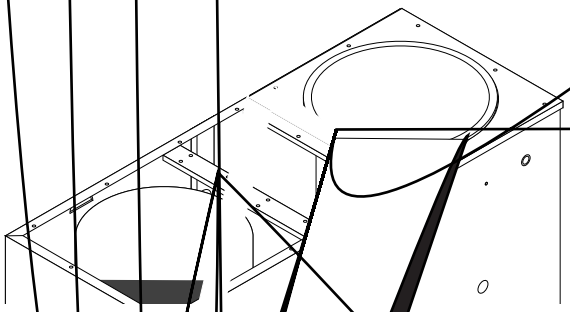

BLK from ON/OFF Switch (208V, 240V Two Wire Models and 380V Three Wire Models)
RED from ON/OFF Switch (230V Two Wire Models)
BLK from Main Harness (208V and 240V Two Wire Models)
BLK from Transformer (380V Three Wire Models)
RED from Main Harness (230V Two Wire Models)
P1331

FIG. 9 FUSE HOLDER TERMINALS

SERVICE (cont.)
LIMIT THERMOSTAT



SERVICE (cont.)

LIQUID LEVEL BOARD AND LEVEL PROBE (cont.)

9. Reconnect the pink wire to terminal 4.
10. Remove the two #8-32 screws securing the level probe to the component bracket.
11. Gently pull the probe out of the component bracket and inspect for corrosion. Replace if necessary.
12 Place the probe so that neither end is in contact with any metal surface of the brewer.
13. Connect the brewer to the power source. Check the voltage across terminals 1 and 3, refer to chart below. There is an approximate delay of five seconds for output to stabilize.

Model	Voltage - Jumper Not Touching Frame	Voltage - Jumper Touching Frame
120/208V & 120/240V - 3 wire w/ground single phase	120V	0
230V - 2 wire w/ground single phase	230V	0
208V or 240V - 2 wire wground single phase	208V or 240V	0 0
280V or 440V - 4 wire w/ground 3 phase	220V or 254V	0 0
380V - 3 wire w/ground 3 phase w/ stepdown transformer	120V	0

14. Disconnect the brewer from the power source.

If voltage is present as described, reinstall the level probe, the liquid level board and level probe are operating properly.
If voltage is not present as described, check the pink wire on the level probe from liquid level board terminal 4.

Removal and Replacement:

1. Remove all wires from the liquid level board.
2. Remove the #10-32 screw and flat washer securing the protective shield to the component bracket.
3. Remove the #10-32 screw and internal tooth lockwasher securing the liquid level board to the component bracket.
4. Remove liquid level board and discard.
5. Install new liquid level board on component bracket and secure with a #10-32 screw and internal tooth lockwasher.
6. Install protective shield and secure with #10-32 screw and flat washer.
7. Refer to Fig. 13 and reconnect the wires.

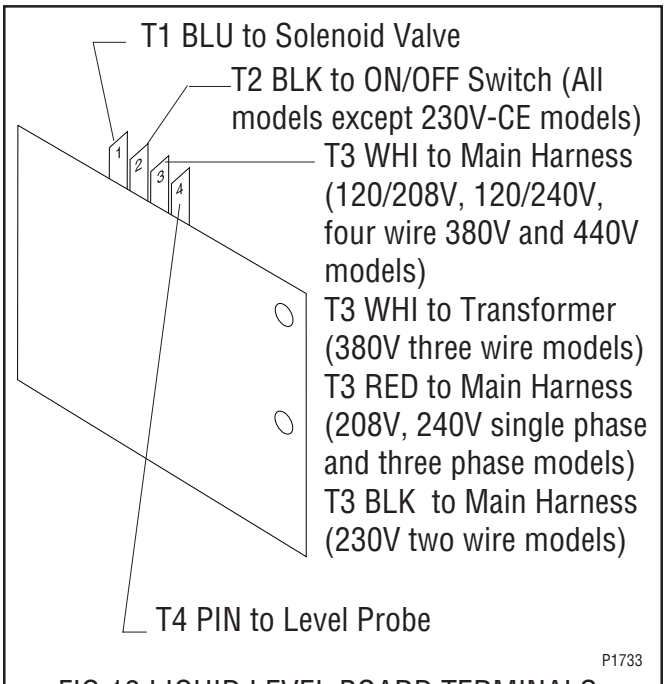

T1 BLU to Solenoid Valve
T2 BLK to ON/OFF Switch (All models except 230V-CE models)
T3 WHI to Main Harness (120/208V, 120/240V, four wire 380V and 440V models)
T3 WHI to Transformer (380V three wire models)
T3 RED to Main Harness (208V, 240V single phase and three phase models)
T3 BLK to Main Harness (230V two wire models)
T4 PIN to Level Probe
1
2
3
4
P1733

FIG.13 LIQUID LEVEL BOARD TERMINALS

SERVICE (cont.)
ON/OFF SWITCH

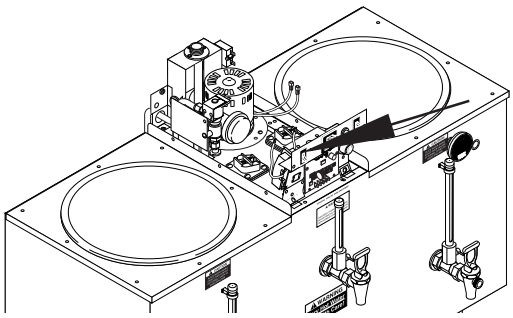


FIG.14 ON/OFF SWITCH

Location:

The ON/OFF switch is located on the left side of the switch mounting bracket. The switch mounting bracket is mounted on the front of the component bracket.

Test Procedures:

1. Disconnect the brewer from the power source.
2. a)120/208V, 120/240V, 208V and 240V Models Remove the black wire on the ON/OFF switch from the fuse holder or circuit breaker and the red wire on the power indicator light.

b) 380V and 440V Models - Remove the black wire on the ON/OFF switch from the fuse holder or circuit breaker and the white wire from the power indicator light.

c) 230V - CE Models - Remove the red wire on the ON/OFF switch from the fuse holder and the black wire on the power indicator light.

3. Connect the brewer to the power source. With a voltmeter, check the voltage across the removed wires. The indication must be:

a) 120 volts ac for 120/208 volt, 120/240 volt and 380 volt models.

b) 208 volts ac for two or three wire 208 volt models.

c) 240 volts ac for two wire 240 volt models prior to #U300004095 and three wire 240 volt models.

d) 230 volts ac for two wire 230 volt models #U300004095 and up).

e) 208 or 240 volts ac for four wire 440 volt models.

4. Disconnect the brewer from the power source.

If voltage is present as described, reconnect the wires and proceed to #5

If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

5. Disconnect the wires on the ON/OFF switch.
6. a) 120/208V, 120/240V, 208V, 240V, 380V and 440V Models - Check for continuity across the terminals on the rear of the switch with the switch in the "ON" (upper) position. Continuity must not be present when the switch is in the "OFF" (lower) position.

b) 230V - CE Models - Check for continuity across the center terminal (2) and the lower terminal (1) when the switch is in the "ON" (upper) position. Continuity must not present when the switch is in "OFF" (lower) position.

If continuity is present as described, the switch is operating properly.

If continuity is not present as described, replace the switch.

Removal and Replacement:

1. Remove the wires from the switch terminals.
2. Compress the clips on the back side of the switch mounting bracket and gently push the through the opening.
3. Push the new switch into the opening and spread the clips to hold switch in the mounting bracket.

NOTE: ON 230V - CE models terminal (3) must be on the top.

4. Refer to Fig. 15 and reconnect the wires.

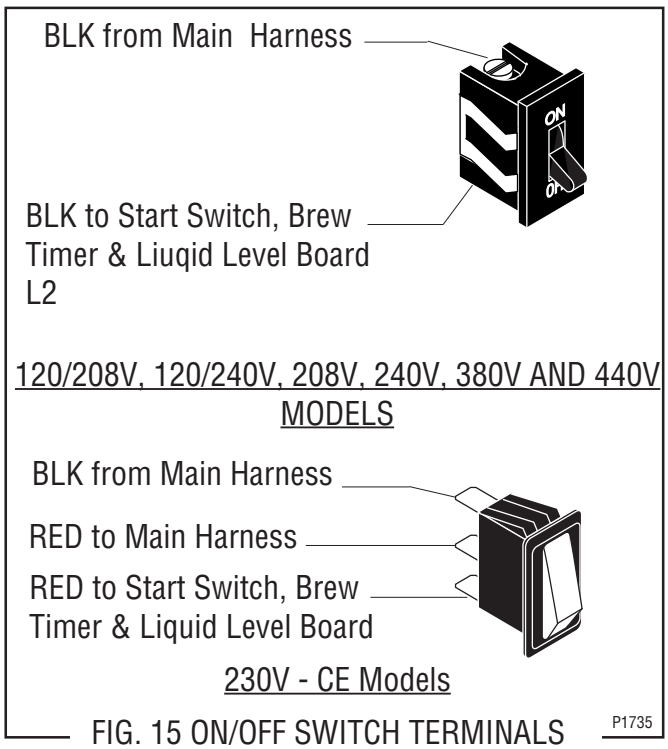
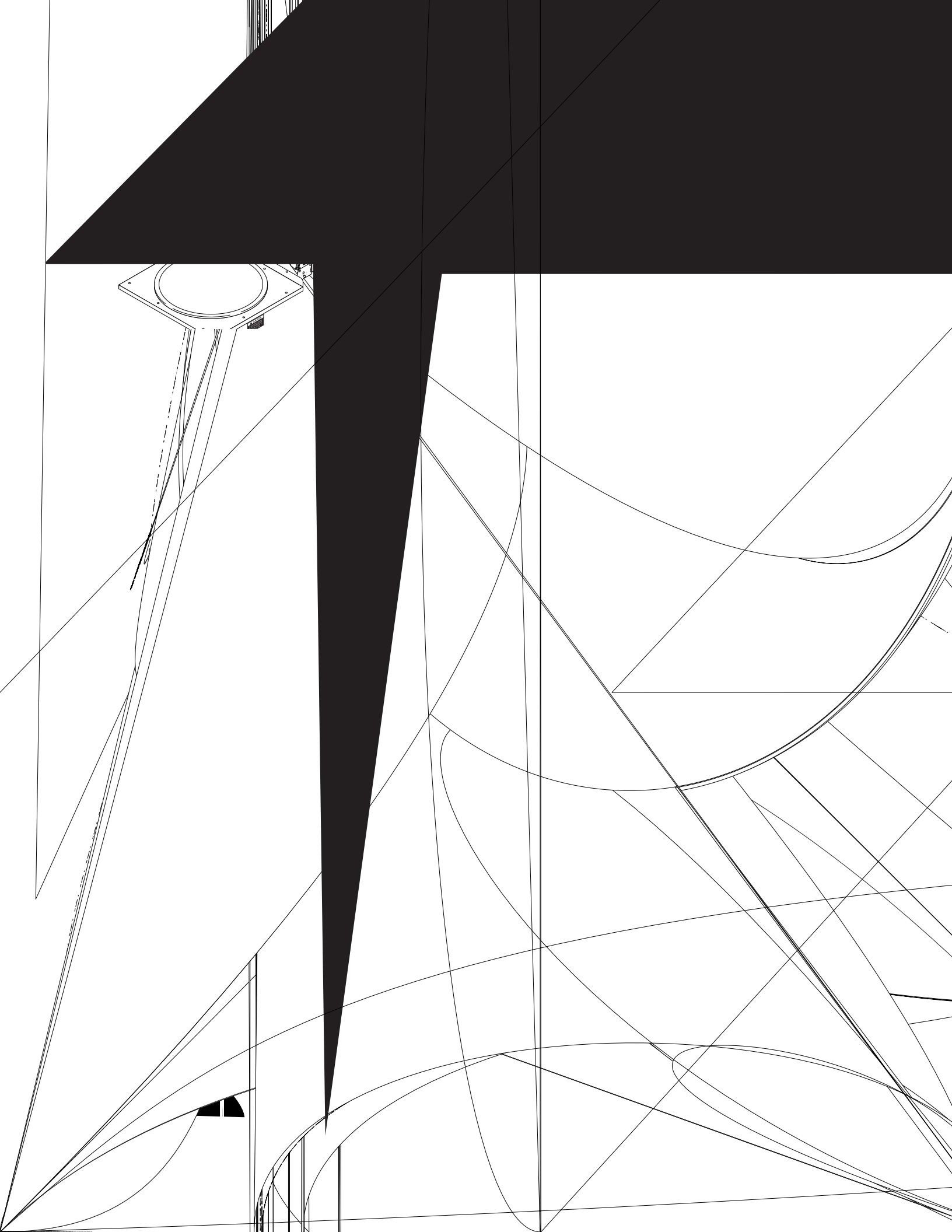

BLK from Main Harness
ON
OFF
BLK to Start Switch, Brew Timer & Liuqid Level Board L2
120/208V, 120/240V, 208V, 240V, 380V AND 440V MODELS
BLK from Main Harness
RED to Main Harness
RED to Start Switch, Brew Timer & Liquid Level Board
230V - CE Models
P1735

FIG. 15 ON/OFF SWITCH TERMINALS



SERVICE (cont.)

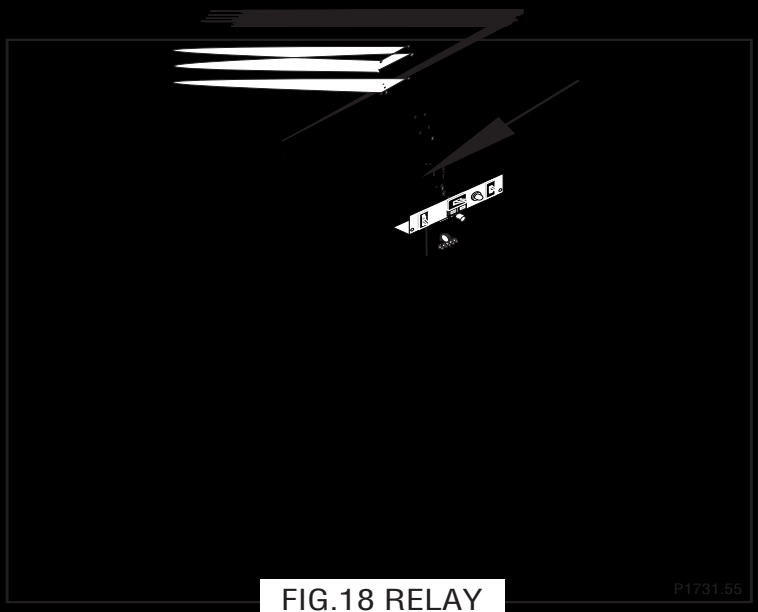


FIG.18 RELAY

Location:

The relay is located on the front part of the component bracket, mounted on the top of the timer bracket.

Test Procedures:

All Models Except 230V - CE Models

1. Disconnect the brewer from the power source.
2. Disconnect the wires from relay terminals "A" & "B". Check for continuity between terminals "A" & "B".

If continuity is present as described, reconnect the wires to terminals "A" & "B" and proceed to #3.
If continuity is not present as described replace the relay.

3. Disconnect the wires from relay terminals 2 & 7.
4. Check for continuity across terminals 2 & 7.

If continuity is present as described, reconnect the wires to terminals 2 & 7 and proceed to # 5.
If continuity is not present as described, replace the relay.

5. Disconnect the wires from relay terminals 5 & 7.
6. Check for continuity across terminals 5 & 7 by manually closing relay contact. Continuity must not be present when contact is released.

If continuity is present as described, reconnect wires, the relay is operating properly.
If continuity is not present as described, replace relay.

230V - CE Models

1. Disconnect the brewer from the power source
2. Disconnect the black wire from relay terminal and the red wire from relay terminal "B". Check voltage across the black and red wire wit voltmeter. Connect the brewer to the power sou The indication must be 230 volts ac.

If voltage is present as described, proceed to #3.
If voltage is not present as described, refer to *Wiring Diagrams* and check the brewer wiring h ness.

3. Disconnect the brewer from the power source
4. Check for continuity across relay terminals "A "B"

If continuity is present as described, reconnect wires to terminals "A" & "B" and proceed to #5.
If continuity is not present as described, replace relay.

5. With the thermostat in the "ON" position and relay engaged disconnect the brewer from power source.
6. Disconnect the blue wires from relay termina and 7. Check for continuity across terminals 1 7.

If continuity is present as described, proceed to #
If continuity is not present as described, replace relay.

7. Turn the thermostat to the "OFF" position, conn the brewer to the power source and turn thermostat back to the "ON" position. Contin should not be present across terminals 1 & 7

If continuity is not present as described, the rela operating properly.
If continuity is present as described, replace the re

SERVICE (cont.)
RELAY (BREWERS W/BREW LOCKOUT)

Removal and Replacement:

1. Disconnect the wires from the relay.
2. For 120/208V, 120/240V, 208V, 380V, 440V and 240V models prior to #U300004095 remove the #6-32 screw securing the relay to the relay mounting bracket. For 230V models #U300004095 and up, remove the two screws securing the relay to the relay mounting bracket.
3. Remove relay and discard.
4. For 120/208V,120/240V, 208V, 380V, 440V and 240V models prior to #U300004095, install new relay on relay mounting bracket and secure with a #6-32 screw. For 230V models #U300004095 and up, install new relay on relay mounting bracket and secure with two #6-32 screws.
5. Refer to Fig. 19 and reconnect the wires.

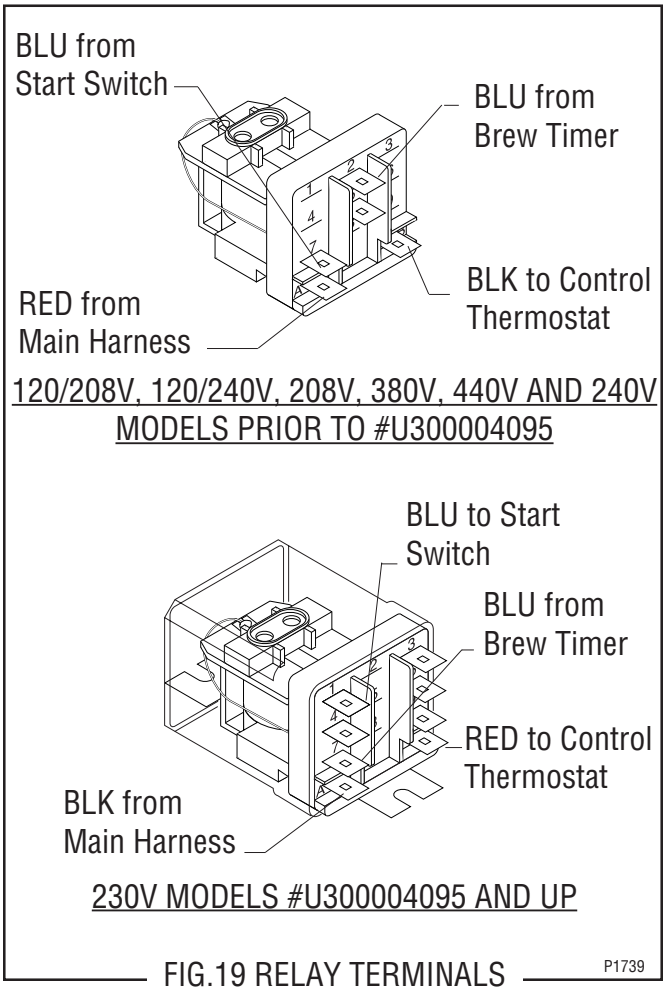


FIG.19 RELAY TERMINALS

SELECTOR SWITCH (HALF BATCH OPTION)

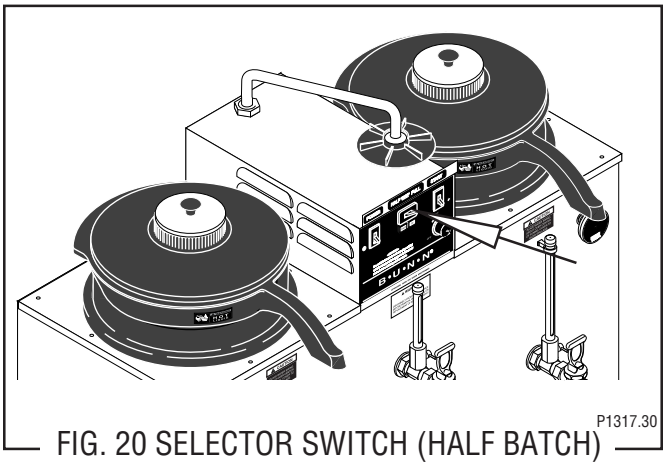


FIG. 20 SELECTOR SWITCH (HALF BATCH)

Location:

The selector switch is located in the upper center of the switch mounting panel.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Disconnect the wires from the switch terminals.
3. Check for continuity across the switch terminals with the switch in the "CLOSED" (left - half) position. Continuity must not present when the switch is in the "OPEN" (right - full) position.

If continuity is present as described, the switch is operating properly.
If continuity is not present as described, replace the switch.

Removal and Replacement:

1. Remove the wires from the switch terminals.
2. Compress the clips on the back side of the switch mounting bracket and gently push the through the opening.
3. Push the new switch into the opening and spread the clips to hold switch in the mounting bracket.
4. Refer to Fig. 21 and reconnect the wires.

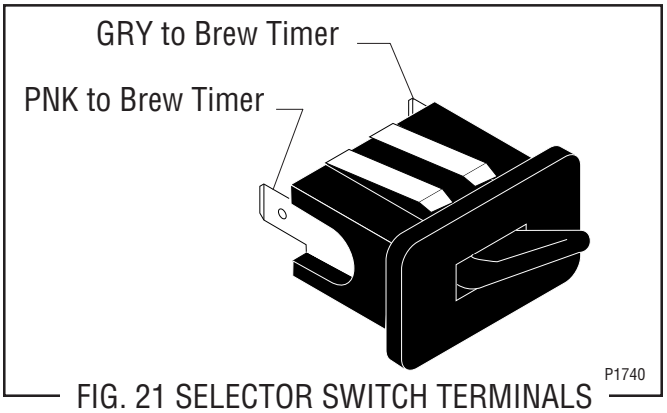
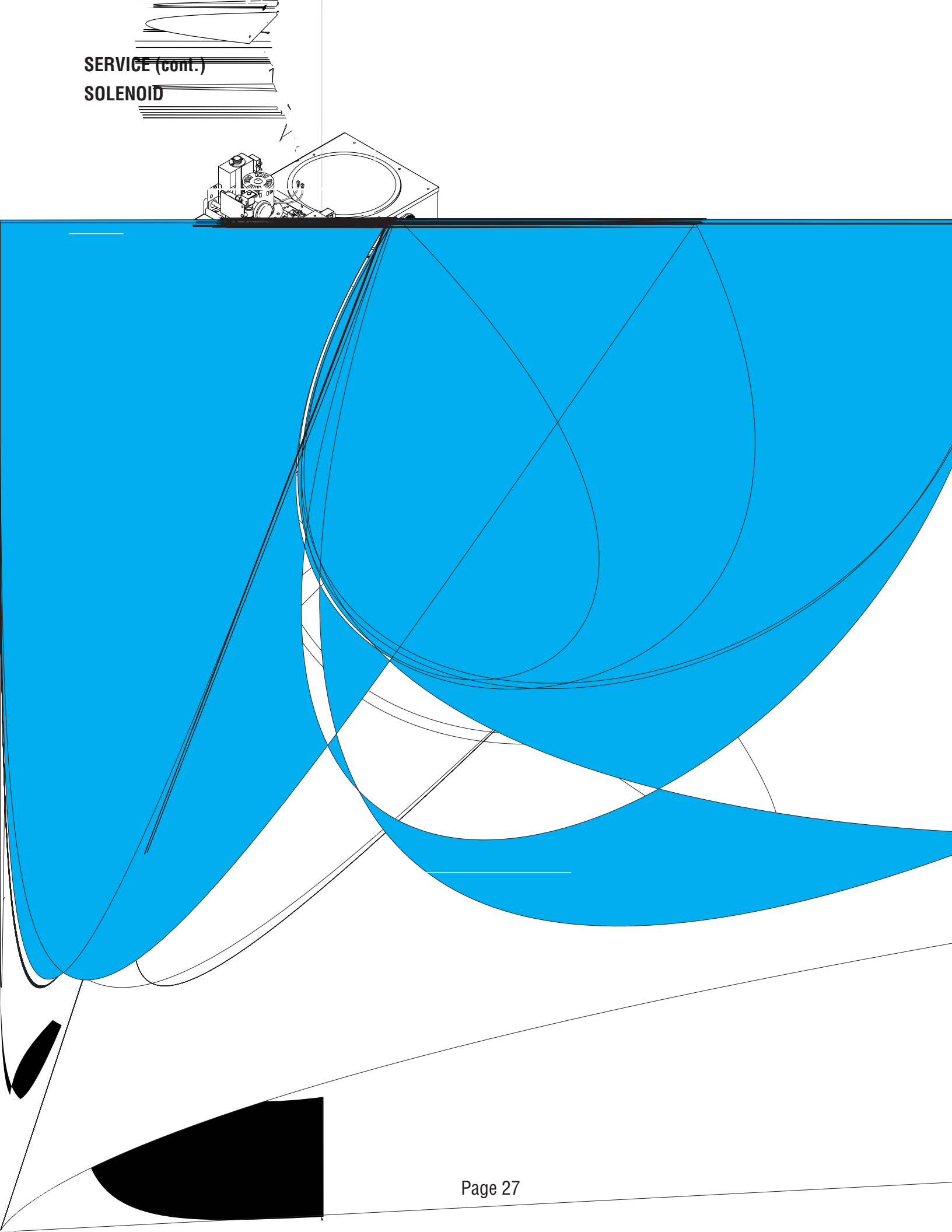


FIG. 21 SELECTOR SWITCH TERMINALS

SERVICE (cont.)

SOLENOID



SERVICE (cont.)

SOLENOID

6. Remove the tank inlet tube grommet and discard.
7. Install new tank inlet tube grommet.
8. Install new solenoid assembly.
9. Install liquid level board, shield and secure solenoid assembly and shield to the component bracket with a #10-32 screw and flat washer..
10. Install water inlet tube to connector on the solenoid.
11. Turn on the water supply to the brewer.
12. Refer to Fig. 23 and reconnect the wires.

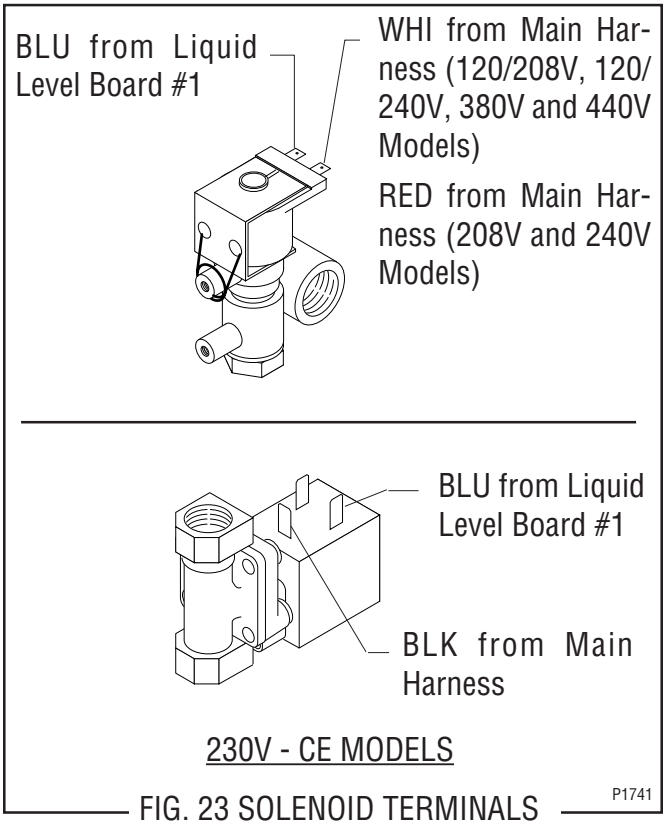
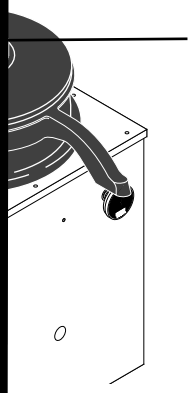
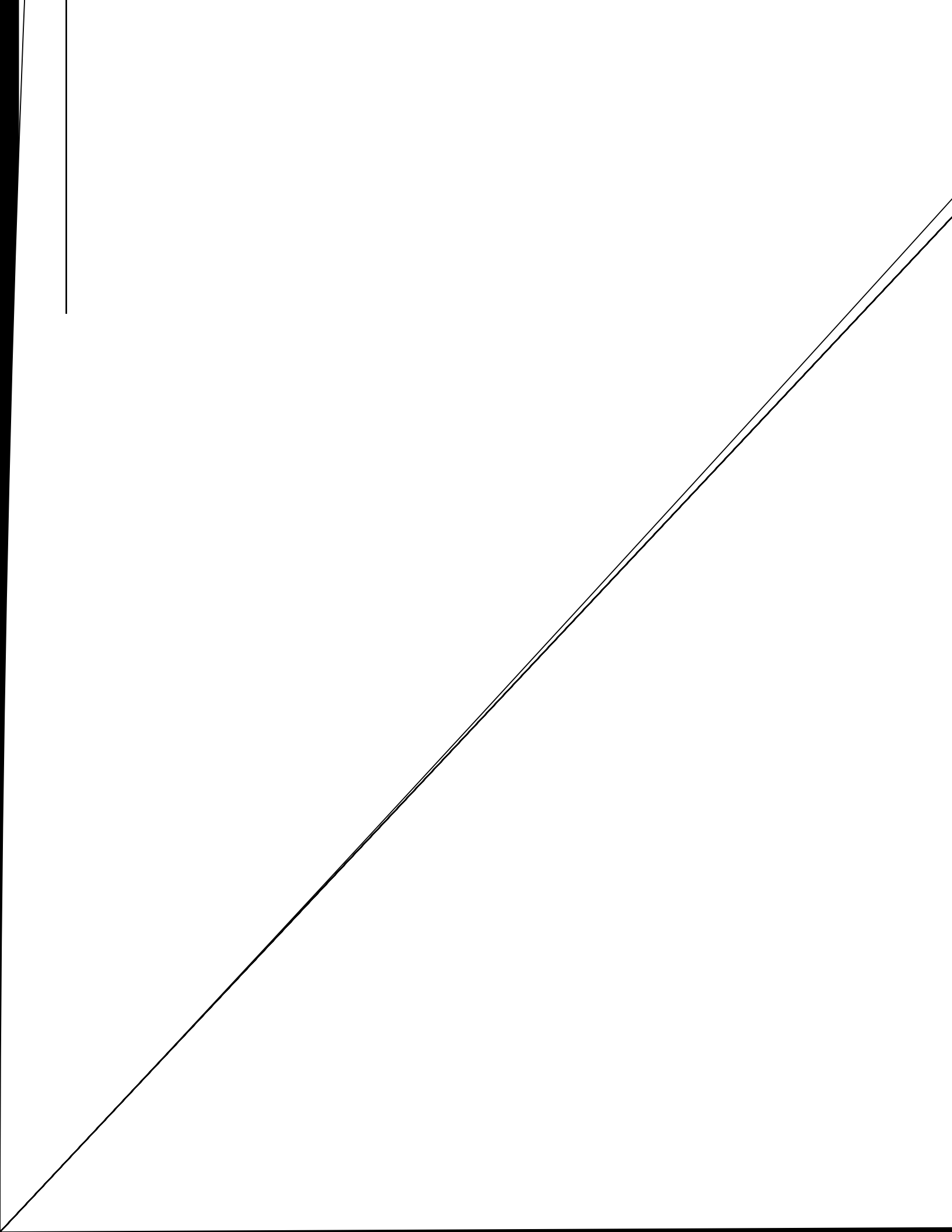

BLU from Liquid Level Board #1
WHI from Main Harness (120/208V, 120/240V, 380V and 440V Models)
RED from Main Harness (208V and 240V Models)
BLU from Liquid Level Board #1
BLK from Main Harness
230V - CE MODELS
P1741

FIG. 23 SOLENOID TERMINALS





THERMAL FUSES (230V-CE MODELS ONLY)

SERVICE (cont.)

TIMER (Early Models)(cont.)

5. With a voltmeter, check the voltage across the sockets P1 and P2 (blue and white wires) of the female connector on the main harness when the "ON/OFF" switch is in the "ON" (upper) position and the start switch pressed. Connect the brewer to the power source. The indication must be:
   a) 120 volts ac for three wire 120/208 volt, 120/240 volt, 380 volt models and 208 or 240 volt ac for four wire 440 volt models.
   b) 208 volts ac for two and three wire 208 volt models.
   c) 240 volts ac for two and three wire 240 volt models.
   d) 230 volts ac for two wire 230 volt CE models.
6. Disconnect the brewer from the power source.
7. Reconnect the three pin connector from the main wiring harness to the connector on the timer.

If voltage is present as described, proceed to #8.
If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

8. Disconnect the black and white wires to the pump.
9. With a voltmeter, check the voltage across the black and white wires when the "ON/OFF" switch is in the "ON" (upper) position and the start switch pressed to the start position and released. Connect the brewer to the power source. The indication must be:
   a) 120 volts ac for three wire 120/208 volt, 120/240 volt, 380 volt and 208 or 240 volt ac for four wire 440 volt models.
   b) 208 volts ac for two and three wire 208 volt models.
   c) 240 volts ac for two and three wire 240 volt models.
   d) 230 volts ac for two wire 230 volt CE models.

If voltage is present as described, the brew timer is operating properly. Reset the timer dial as required, to obtain the desired brew volume.
If voltage is not present as described, replace the timer.

Removal and Replacement:

1. Separate all connectors between the brewer wiring harness and the timer.
2. Disconnect the timer leads from the pump leads.
3. Remove the two #8-32 screws securing the brew timer to the component bracket and remove timer.
4. Install new timer circuit board as described in *Late Model Timer* section on the following pages.
5. Refer to Fig. 33 to reconnect the wires.
6. Install the Timer Setting Decal, provided with the timer replacement kit, on the back of the front access panel.
7. Adjust the timer as required. Refer to *Late Model Timer* section on the following pages.

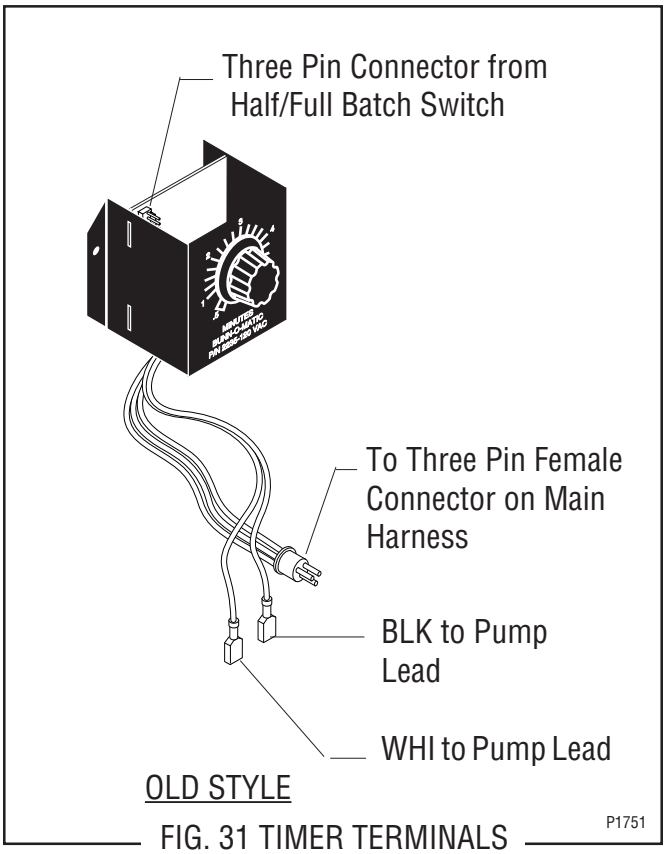

Three Pin Connector from Half/Full Batch Switch
To Three Pin Female Connector on Main Harness
BLK to Pump Lead
WHI to Pump Lead
OLD STYLE
P1751

FIG. 31 TIMER TERMINALS

SERVICE (cont.)
DIGITAL TIMER (Late Models)

NOTE: All volume settings must be done with the sprayhead installed.

1. **Modifying brew volumes.** To modify a brew volume, first check that the SET/LOCK switch is in the "SET" position on the circuit board.

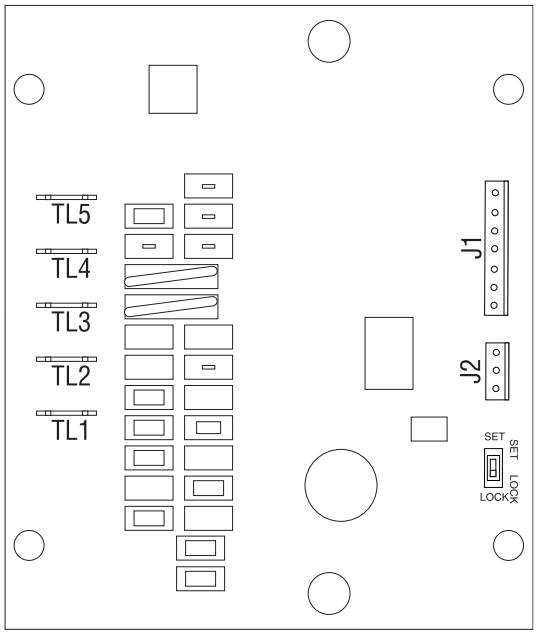
To increase a brew volume, place the ON/OFF switch in the "ON" position, press and hold the START switch until you see three breaks in the water stream from the swing arm. Release the switch and press it again one or more times. (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory.) Each time the switch is pressed, two seconds are added to the brew time period. Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

To decrease a brew volume, place the ON/OFF switch in the "ON" position, press and release the START switch once for every two-second interval to be removed from the total brew time period; then immediately press and hold down the START switch until you see three breaks in the water stream from the swing arm. Release the switch. (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory). Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

2. **Setting brew volumes.** To set a brew volume, first check that the SET/LOCK switch is in the "SET" position on the circuit board. Place the ON/OFF switch in the "ON" position, press and hold the START switch until you see three breaks in the water stream from the swing arm and then release the switch. (Failure to release the switch within two seconds after the third break in the water stream causes the volume setting to be aborted and previous volume setting will remain in memory.)
View the level of the liquid being dispensed. When the desired level is reached, turn the ON/OFF switch to "OFF".

NOTE: The brewer remembers this volume and will continue to brew batches of this size until the volume setting procedure is repeated.
NOTE: When brewing coffee, volume will decrease due to absorption by the coffee grounds.
NOTE: Half-Batch and full batch settings must each be set separately.

3. **Setting programming disable feature.** If it becomes necessary to prevent anyone from changing brew time once programmed, you can set the SET/LOCK switch to the "LOCK" position. This will prevent any further programming until switch is once again put into the "SET" position.



BLU/BLK wire from TL5 to P1
WHI/GRN wire from TL4 to (WHI) Pump
WHI/BLU wire from TL3 to (BLK) Pump
WHI wire from TL2 to P2
BLK wire from TL1 to P3

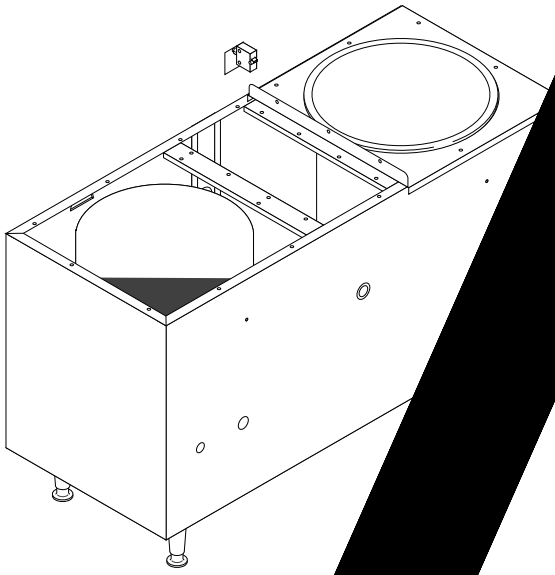
J2 - Three Pin connector from Half/Full Batch Switch

P2037

FIG. 33 DIGITAL TIMER TERMINALS

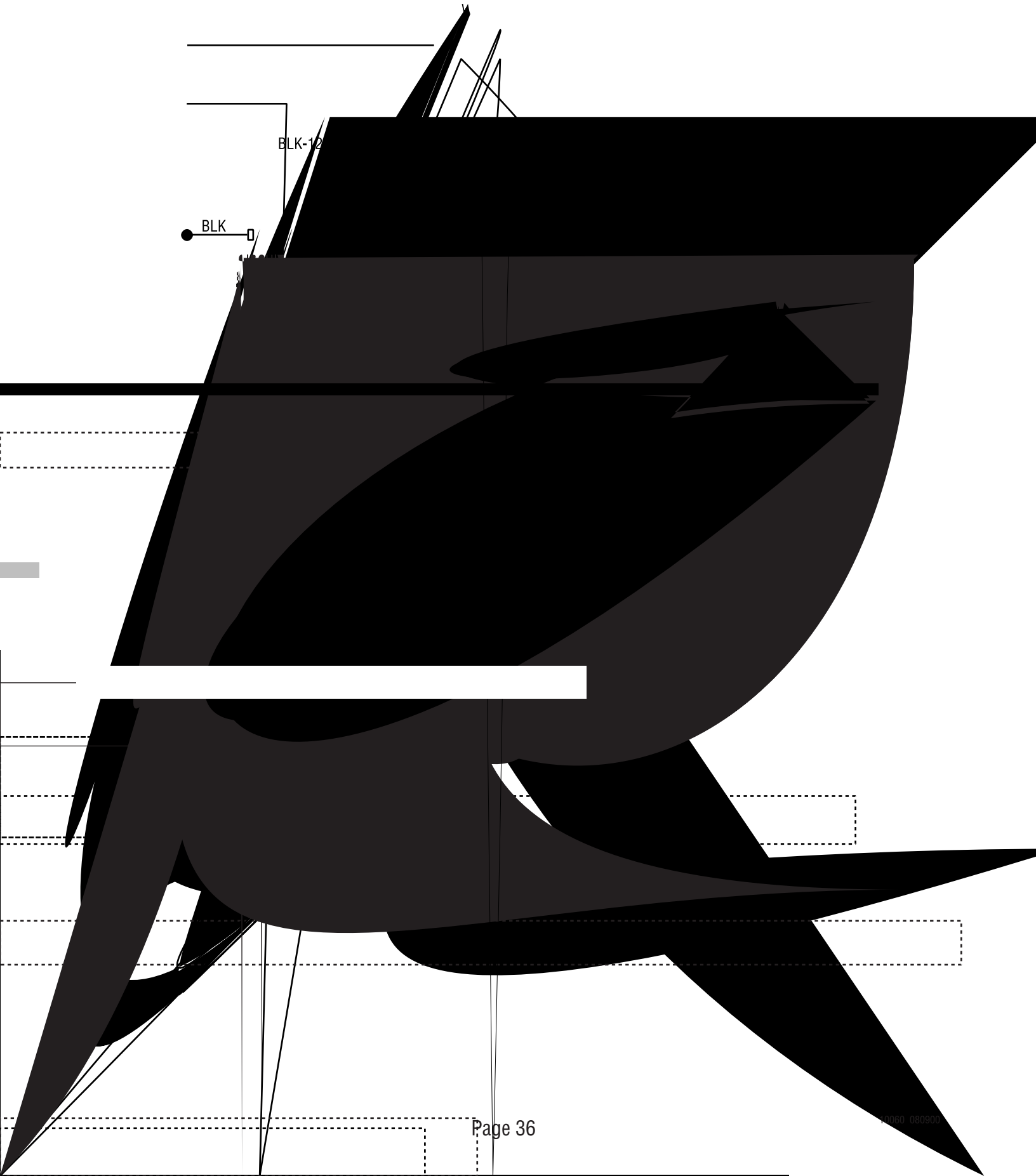
SERVICE (cont.)

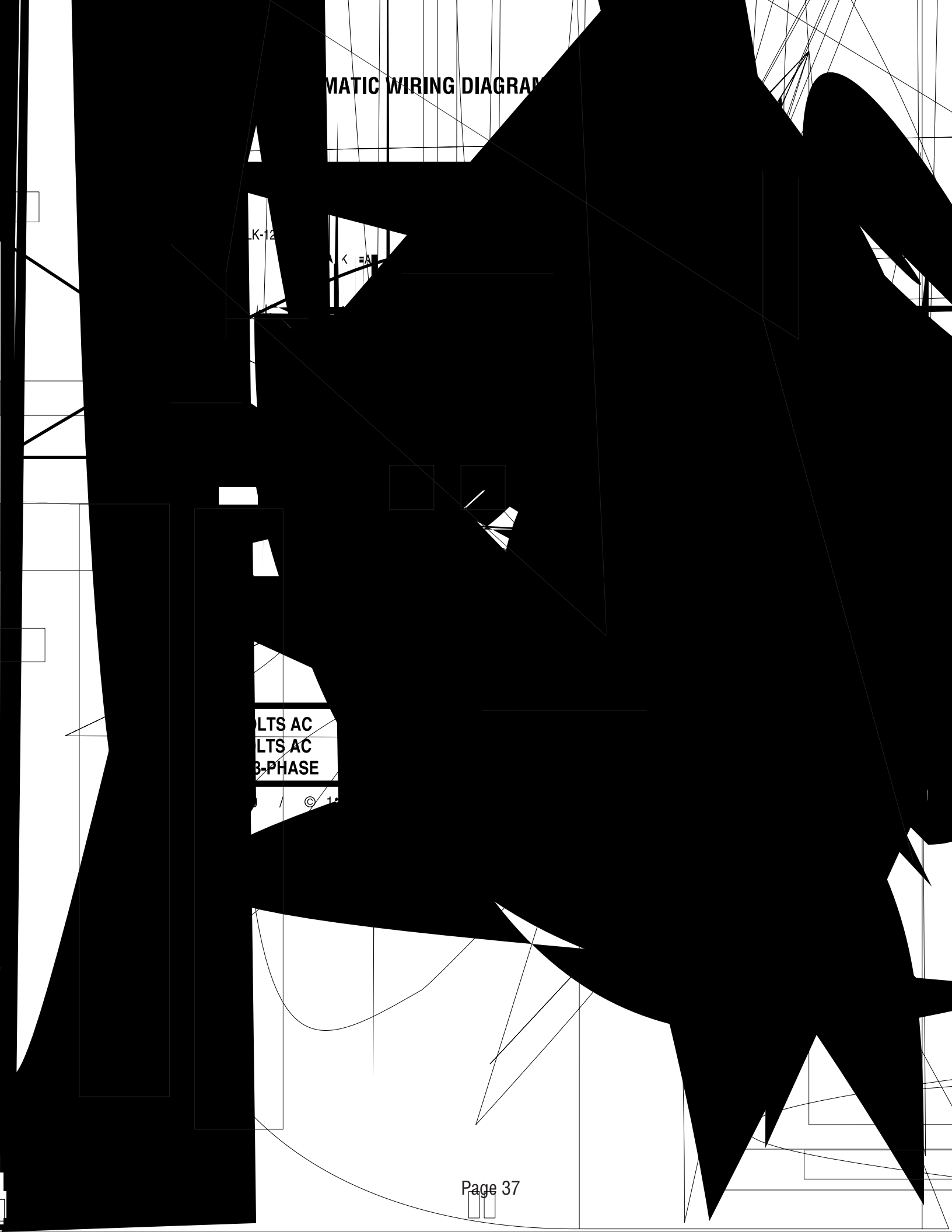
TRANSFORMER (380V THREE WIRE MODELS ONLY

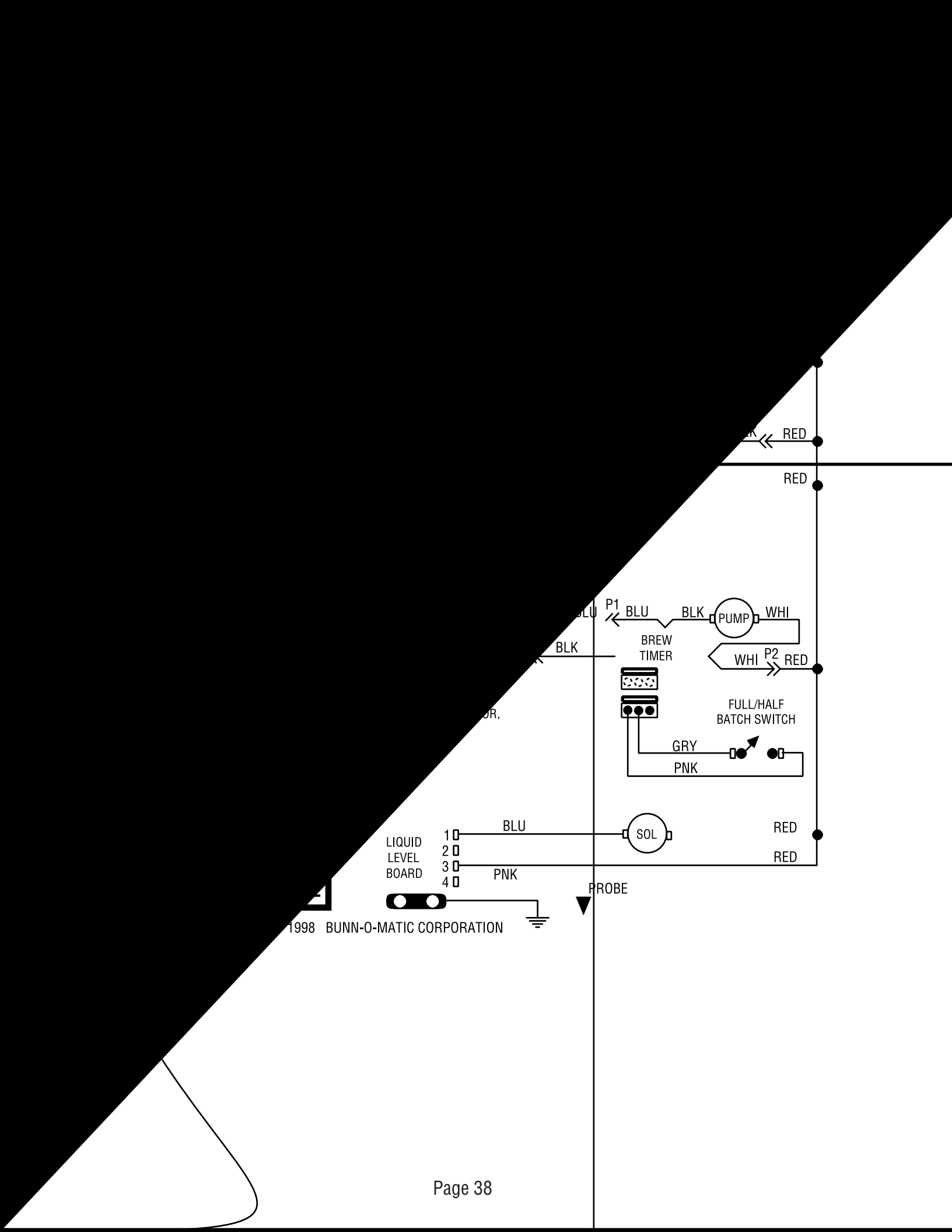


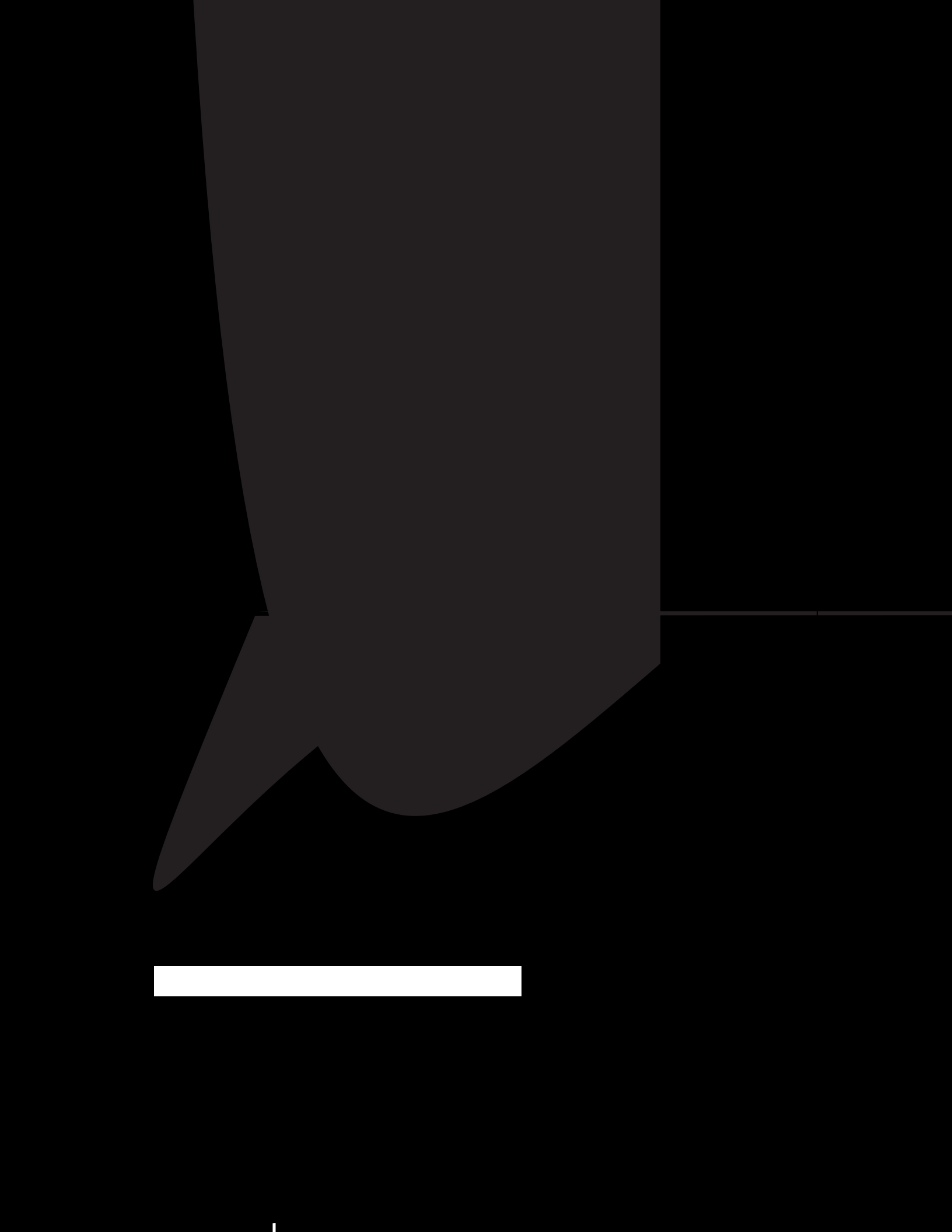
BLK from
Terminal Block

SCHEMATIC WIRING DIAGRAM U3 & U38

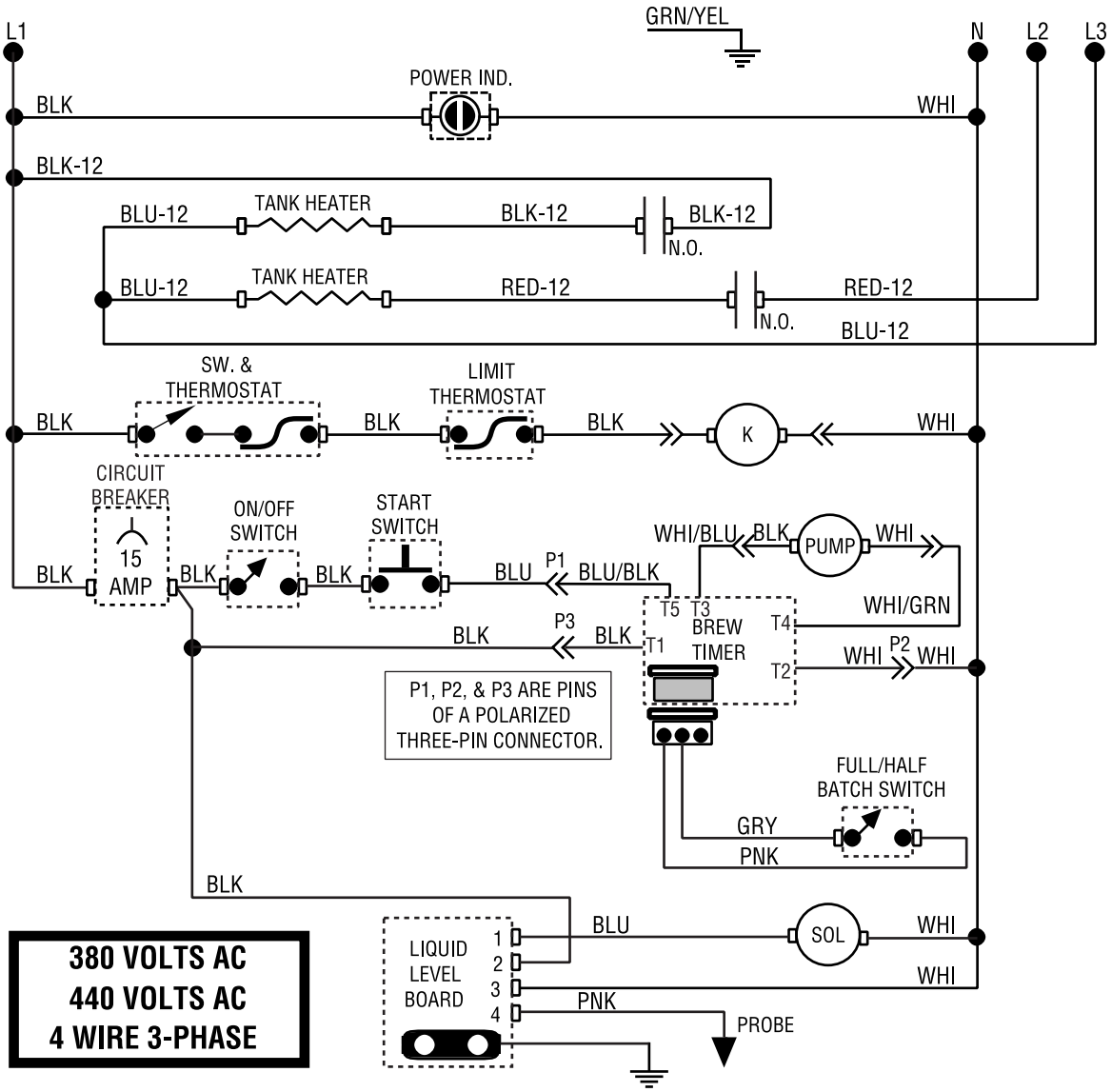



MATIC WIRING DIAGRA
LK-12
LTS AC
LTS AC
3-PHASE


RED
RED
P1
BLU
BLK
PUMP
WHI
BREW
TIMER
BLK
WHI
P2
RED
FULL/HALF
BATCH SWITCH
GRY
PNK
BLU
SOL
RED
RED
LIQUID
LEVEL
BOARD
1
2
3
4
PNK
PROBE
1998 BUNN-O-MATIC CORPORATION



SCHEMATIC WIRING DIAGRAM U3833



SCHEMATIC WIRING DIGRAM U3833